Transcriptional circuits controlling mitochondrial biogenesis

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MAMMALIAN mitochondria consist of an estimated 1100 proteins, including 13 of which are encoded by their own mitochondrial genome. All of these genes must be controlled in space and time during growth, differentiation, and in response to external stimuli. Here I will present recent work from our group aimed at discovering the 1100 nuclear genes encoding the mammalian mitochondrial proteome. Then, I will present our computational genomics studies aimed at systematically deciphering the transcriptional circuits that orchestrate the expression of all of these genes. Finally, I will discuss how we are able to manipulate these circuits using small molecules identified through chemical screening efforts.